

RAND Study Looks at Possible Organization Types for Spent Fuel/HLW Management

A federal government corporation and an independent government agency are the two most promising models for a new organization to manage and disposal of spent nuclear fuel and high-level radioactive waste in the United States, according to a new RAND Corp. report.

Both models can achieve the critical attributes of accountability, transparent decision-making, insulation from political control, a public interest mission, and organizational stability. A third organizational model, a federally chartered private corporation, is not a good option, the report stated, because its commitment to stockholders and profit could result in weakened public accountability and poor political credibility.

In 2010, Secretary of Energy Steven Chu established the Blue Ribbon Commission on America's Nuclear Future following a decision by President Obama to withdraw the U.S. Department of Energy's license application to the Nuclear Regulatory Commission for a proposed repository at Yucca Mountain, Nev., for spent nuclear fuel and other high-level radioactive waste. The Blue Ribbon Commission conducted "a comprehensive review of policies for managing the back end of the nuclear fuel cycle, recommended a new strategy," and issued its final report last year.

Views differ about the most appropriate organizational model. While noting that there are other possibilities, the Blue Ribbon Commission recommended a federal government corporation. A bipartisan group of senators in 2012 called for the establishment of an independent government agency. Earlier this year, the Obama administration released its "Strategy for the Management and Disposal of Spent Nuclear Fuel and High-level Radioactive Waste." While agreeing that a new organization is needed, it concluded "that there are several viable organizational models that can possess the critical attributes." (For more on the DOE Strategy, see page 34, this issue.)

RAND, a nonprofit research institution, was selected by the Department of Energy to conduct an analysis of alternative organizational models and develop a decision framework that would assist policymakers in deliberations about how best to shape a new organization.

"Most importantly, policymakers will need to determine the relationships between the new organization and the president and Congress, how it will be funded, and the

role of stakeholders and other organizations," said Lynn Davis, a senior political scientist at RAND and one of the study's co-authors.

The president can have a direct role through an independent government agency, or a largely indirect role through a federal government corporation, researchers say. A direct relationship ensures that the public interest is taken into account in all management and disposal organization operations, including materials siting and transportation. An indirect relationship insulates the activities of the organization from the turnover of administrations and allows for flexibility in siting negotiations and contracting and procurement operations.

Congress will have an oversight role for the new organization, and policymakers will need to determine if the Senate will confirm its leadership, and which congressional committees will have oversight jurisdiction.

Policymakers also will need to determine if a new management and disposal organization is to be financed through annual congressional appropriations, through a dedicated fund or both. For example, NASA [the National Aeronautics and Space Administration], an independent government agency, receives annual appropriations; the Tennessee Valley Authority (a government corporation) has a dedicated funding stream; the U.S. Nuclear Regulatory Commission (an independent government agency) and Amtrak (a government corporation) have dedicated funding streams and annual appropriations.

The new organization will have multiple stakeholders, including utility companies, states, local communities, nongovernmental organizations, and the U.S. Department of Defense and the DOE. Policymakers will need to determine if these interests will be represented within the organization or through different coordination and consultation mechanisms.

"Policymakers will need to strike the important balance between the competing values of accountability and flexibility that are required in creating a new organization," said Debra Knopman, a co-author and RAND vice president and director of RAND Justice, Infrastructure, and Environment.

Researchers caution that the success of the new organization will be influenced by many factors, and the organizational form is only one of these factors as changes in

national priorities and the political environment will affect outcomes.

The report, “Choosing a New Organization for Management and Disposition of Commercial and Defense High-Level Radioactive Materials,” can be found at <http://www.rand.org/pubs/monographs/MG1230.html>. The research was sponsored by the DOE and was conducted in the Environment, Energy, and Economic Development Program within RAND Justice, Infrastructure, and Environment. JIE provides insights and solutions to public- and private-sector decision-makers across numerous domains, including criminal and civil justice; public safety; environmental and natural resources policy; energy, transportation, communications, and other infrastructure; and homeland security.

Texas Legislature Considers Increasing Andrews County LLW Disposal Site Capacity

A Texas legislator introduced a bill in early April that would increase the limit of non-compact radioactive waste allowed in the Texas Low-Level Radioactive Waste Disposal Compact waste disposal facility in Andrews County. The site is operated by Waste Control Specialists LLC (WCS).

The bill would allow 220 000 curies of waste to be imported into the facility annually, rather than the current 120 000-curie limit. The increase in the amount of waste allowed into the facility would also increase the amount of revenue for the state and county. Currently, 70 percent of the facility is reserved for waste from the states of Texas and Vermont, the two members of the Texas compact. The remaining 30 percent is available for the disposal of Class B and C LLW from around the country. “This bill will allow greater flexibility to dispose of non-compact waste in the remaining 30 percent,” stated William Lindquist, CEO of WCS. It would also “keep our 180 people working as well, and make sure that we can operate at full strength, at the one-of-a-kind facility,” Lindquist added.

The Texas facility is the only LLW disposal site in the United States that accepts Class B and C waste from all waste generators. The EnergySolutions LLW disposal facility at Clive, Utah, accepts only Class A waste, and the LLW disposal facility in Barnwell, S.C., accepts waste only from Atlantic Compact states: Connecticut, New Jersey, and South Carolina. The WCS facility has been operating for slightly more than a year.

Are Single-Shell Tanks Leaking at Hanford?

At least six single-shell tanks at the Hanford Site in southeastern Washington State are showing signs of declining liquid levels, according to the U.S. Department of Energy, which prompted Washington Gov. Jay Inslee to announce in late February that the tanks were leaking, although he was quick to agree with the DOE that there is no imminent health danger to the public from the tanks.

The six affected tanks—tanks T-111, T-203, T-204, TY-105, B-203, and B-204—include known “leakers” as well as tanks that have never been suspected of leaking. Five of the tanks date from the World War II era, while the sixth was built in the 1950s. The amount of waste in each tank varies.

Interestingly, five of the six tanks contain wastes that the DOE has identified as potentially qualified for disposal at the Waste Isolation Pilot Plant in New Mexico, which was designed to dispose of transuranic defense waste. The DOE said that some 3.1 million gallons of waste, being stored in some 20 tanks at Hanford, could be retrieved, treated, packaged, characterized, and certified as defense-related mixed TRU tank waste. According to the DOE, this option could provide the department with an option to deal with at least some of the leaking tanks and expedite the overall tank waste retrieval effort at Hanford.

The DOE is currently building the Waste Treatment Plant at the Hanford site, which is designed to take the wastes from the tanks, vitrify the high-level wastes for disposal at a deep geological repository, and treat the lower level wastes for disposal as LLW. That project, however, is years behind schedule and billions of dollars over budget, with no completion date being projected by the DOE at this time.

- In a related story, a video inspection of Tank AY-102, a double-shell tank suspected of leaking from its inner shell, showed no additional leaks. As noted in a recent article in *Radwaste Solutions*, Tank AY-102 had a challenging construction experience in the late 1960s (see “First Double-Shell Tank Leak Discovered at Hanford,” *Radwaste Solutions*, January–April 2013, p. 40). The tank was recently shown to be slowly leaking waste from its inner shell into the 30-inch-wide space between the inner and outer shells. The amount estimated to have leaked ranges from 190 gallons to 520 gallons, but evaporation has resulted in between 20 and 50 gallons of drying waste located between the shells. However, the material detected between the

shells continues to be damp, indicating that the inner shell continues to leak, a spokesman for the tanks operations contractor said.

NRC: Waste Fund Monies “Not Enough”

The U.S. Nuclear Regulatory Commission has \$11.1 million in unobligated carryover money appropriated from the Nuclear Waste Fund, the agency told the U.S. Court of Appeals for the District of Columbia, which is hearing a lawsuit on whether the NRC should continue its licensing activities on the Yucca Mountain project. In addition, the NRC has \$2.5 million in obligated waste fund money.

The \$13.6 million, however, is not enough money for the agency to complete its review of the Yucca Mountain license application, the NRC told the court.

The U.S. Department of Energy terminated the Yucca Mountain project in 2010, citing the “unworkable” nature of the project because of the strong opposition from the state of Nevada, where the project is located. The National Association of Regulatory Utility Commissioners, the states of Washington and South Carolina (which have large stockpiles of defense-related waste that was destined to be disposed at Yucca Mountain), and some individuals have filed suit against the agency, basing their suit on the fact that the NRC’s own licensing panel said that the DOE does not have the right to stop the NRC review of the license application. The NRC stopped work on the review in 2011, citing lack of funding to continue.

Spent Fuel as Irradiation Source Material? Oregon Researcher Thinks So

A researcher at Oregon State University says he has invented a way to use spent nuclear fuel to produce the gamma rays needed to irradiate medical supplies, food, and other commodities—an advance that could change what is now a costly waste disposal concern into a valued commodity.

The technology, if widely implemented, might allow each of the operating nuclear reactors in the United States to create a revenue stream of \$10 million annually while providing thousands of new jobs. And by lowering the

cost of irradiation, it could become commercially feasible for a wider range of uses.

A provisional patent has been issued on the technology, and commercialization efforts are under way through a private company created for that purpose.

“This is essentially a way to reuse spent nuclear fuel for a valuable purpose,” said Russell Goff, a masters student in the Oregon State University Department of Nuclear Engineering and Radiation Health Physics. “Until now, no one really thought to do this. But this approach is safe, practical, and economical. Instead of treating all nuclear waste as a disposal problem, we could be putting much of it to good use.”

Irradiation is a growing industry, and is commonly used in the sterilization of medical supplies such as bandages or syringes. It’s also widely approved for helping to preserve foods; many spices and some fruits and meat products are irradiated.

The gamma-ray sterilization industry, however, is constrained by the need for cobalt-60, the radioactive isotope most commonly used. “The U.S. already uses about half of the world’s supply of cobalt-60 for various types of irradiation, and the process can be expensive,” Goff said. “The new system we’ve created should be significantly less expensive, and as such could open the technology to more routine uses. We could double the world supply of gamma rays with this new technology and still won’t come close to meeting the market demand for this valuable resource.”

Sterile medical supplies are a huge market for gamma irradiation, Goff said, and increased used of irradiation could reduce the need for sterilization with ethylene oxide gas, which is a highly toxic and flammable gas.

The system Goff has invented adds another level of protection to prevent unwanted fission products from escaping the spent nuclear fuel and entering the environment, but allows gamma radiation to be released in a controlled manner for irradiation purposes. Because recently spent nuclear fuel—less than 12 years old—still has fairly intense levels of radiation, it provides an economical way to irradiate products.

The nuclear waste handling systems needed to use the new technology are similar to those already being used at nuclear power plants, he said, and the process of sterilizing the products is almost identical to processes used in the cobalt-60 irradiation industry today.

Aside from providing a commercial use for spent nuclear fuel, the approach would also reduce the significant expense of otherwise storing it, Goff noted. This system

might also have special appeal in developing countries, where refrigeration and other approaches to preserving food, as well as access to sterile medical supplies, are not always readily available.

ELEA: License Application for Interim Spent Fuel Storage Facility to be Submitted in Fiscal 2015

The Eddy-Lea Energy Alliance (ELEA) intends to submit a site-specific license application for an interim spent fuel storage installation in fiscal 2015, according to a February 26 letter to the U.S. Nuclear Regulatory Commission. ELEA is a consortium of two New Mexico counties—Eddy and Lea Counties—and two New Mexico cities, Carlsbad and Hobbs. The region already hosts the Waste Isolation Pilot Plant, a geological repository for defense transuranic waste located near Carlsbad in Eddy County, and the Urenco USA uranium enrichment plant, located in Hobbs in neighboring Lea County.

The two counties own some 1000 acres between Carlsbad and Hobbs that would be the site of the proposed facility. The government's fiscal year 2015 begins on October 1, 2014.

NRC Amends Regulations on Security of Radioactive Materials

The U.S. Nuclear Regulatory Commission is amending its security regulations to expand upon and make generally applicable measures the agency imposed for risk-significant radioactive materials after Sept. 11, 2001.

In a final rule published in the *Federal Register* on March 19, the NRC adds a new Part 37 to its regulations in Title 10 of the U.S. Code of Federal Regulations (10 CFR), and makes conforming changes to other parts of NRC regulations regarding radioactive materials.

The new regulation, which takes effect 60 days after publication, establishes security requirements for the most risk-significant radioactive materials (those in Category 1 and Category 2 of the International Atomic Energy Agency's rankings of radiation sources), as well as for shipments of small amounts of irradiated reactor fuel.

The NRC and state regulators ensure the security of more than 75 000 radioactive sources used in medical, commercial, and research activities. Because of the wide

variety of sources, security programs are tailored to the specific needs of each licensee. But all security programs must include background checks, personnel access controls, security barriers, detecting unauthorized access, and an armed law enforcement response. The NRC and state regulators conduct periodic inspections to ensure licensees are meeting the NRC's security requirements.

The NRC and its partners in 37 Agreement States took steps to strengthen the security of risk-significant radioactive materials immediately after the terrorist attacks of Sept. 11, 2001. Since that time, the agency has issued various orders imposing increased controls, implemented requirements for fingerprinting and criminal background checks for people with access to certain radioactive materials, and established the National Source Tracking System. The NRC cooperates with the departments of Homeland Security and Energy as well as other federal, state and local agencies on security matters, and chairs the inter-agency Radiation Source Protection and Security Task Force.

The new Part 37 and changes to other parts of 10 CFR contained in the final rule incorporate NRC's lessons learned in implementing the post-Sept. 11 security measures, as well as stakeholder input on the proposed rule. Making these requirements in NRC's regulations generally applicable enhances consistency of implementation as well as transparency and predictability of NRC's oversight of radioactive material security.

The NRC published a proposed rule for public comment on June 15, 2010, and received 110 comment letters from licensees, state agencies, industry organizations, individuals and a federal agency. The comments are addressed in the *Federal Register* notice accompanying the final rule. The NRC's Commissioners approved publication of the final rule in March 2012.

Budget Sequester Means Funding Cuts at Federal Cleanup Sites; Other D&D Updates

As expected, the U.S. federal budget "sequester" that went into effect on March 1 has led to funding cuts and worker layoffs at U.S. Department of Energy cleanup sites across the country. With cleanup work at the Hanford site in southeastern Washington state slated to lose some \$171 million due to budget cuts, layoff notices went out in mid-March to some 235 Hanford workers, and some 2500 contractor employees will be subject to furloughs—paid or

unpaid time off. Layoffs began on April 1. At the Savannah River Site, some 2000 workers were placed on reduced, 32-hour-per-week schedules on April 1, while others may suffer “full furloughs.”

- The U.S. Department of Energy’s Environmental Management Office met a major regulatory milestone by completing construction of enclosures and ventilation systems required for the cleanup of buildings that are part of the Separations Process Research Unit (SPRU) at the Knolls Atomic Power Laboratory. The consent order between the DOE and the U.S. Environmental Protection Agency required the construction of enclosures and ventilation systems before workers could treat and dispose of tank sludge and demolish two facilities. Built in the 1940s, the SPRU supported the mission to research the chemical process to extract plutonium from irradiated materials. Although equipment was flushed and drained, and bulk waste was removed following the shutdown of the facilities in 1953, residual materials are present in the tanks, buildings H2 and G2, and interconnecting pipe tunnels.

- Almost three decades since it was shut down in 1984, the San Mateo uranium mine property in New Mexico has been remediated. The entire area, which includes several hundred acres, is part of a grazing allotment on national forest property. Groundcover seeding, using a native mix of seeds including gamma grass suitable for the elevation, soil type, and ecological zone, has been completed, and the site will be monitored to be sure that the groundcover becomes well established. Mount Taylor District Ranger Matt Reidy, who works in the Cibola National Forest, recalled that “There was a time when people used to sell raw uranium ore from the back of their pickup trucks. They would park at the railroad depot in Milan and sell the unprocessed ore to the Atomic Energy Commission back when the mining industry first took off in this area.” Several other smaller mines in the area are in various stages of environmental remediation.

- Cleanup at the north end of Hanford’s 300 Area has been completed, with the removal of 60 buildings and 53 contaminated soil waste sites north of Apple St., a street familiar to Hanford workers because it divides the center of the 300 Area east to west. Completing the work and replanting the area with native grasses met a legally binding Tri-Party Agreement deadline. The 300 Area was used for almost 60 years to fabricate uranium fuel for Hanford’s production reactors, which produced plutonium for the nation’s nuclear weapons program. It was also used for research. The entire 300 Area once had 167 buildings to be

demolished, not counting some that will be retained for use by Pacific Northwest National Laboratory. Just 19 remain to be torn down. All but one are planned to be demolished by the end of this year.

- Moab Mill Tailings removal project employees returned to work in March, following a three-month planned furlough. One hundred percent of the furloughed workers returned to the project. The tailings are being shipped by train 30 miles north of the Moab site to a disposal cell constructed near Crescent Junction, Utah. Some 36 percent of the total 16 million tons of tailings have already been placed in the disposal cell.

- The U.S. Department of Energy’s cleanup efforts at the Paducah site have progressed with the demolition of one of the site’s most contaminated structures. Remediation contractor LATA Environmental Services of Kentucky reduced the C-340 Metals Complex, better known as the Metals Plant, to a slab, nearly two months ahead of schedule and within budget. The project began in September 2012. The Metals Plant, which operated between 1956 and the mid-1980s, was used to manufacture uranium metal during the Cold War era and contained polychlorinated biphenyls (PCBs), radionuclides, and asbestos. It is the first uranium processing facility at the site to undergo full-scale demolition.

- At the beginning of March, the U.S. Department of Energy and Atomic Energy of Canada Limited signed a Statement of Intent (SOS) enabling information sharing on lessons learned and the development and application of new technologies to improve the safety, cost-effectiveness, and schedule of the DOE’s Environmental Management Office and the Canadian Nuclear Legacy Liabilities Program.

- The cost estimate for the remaining environmental cleanup at Hanford, plus some post-cleanup oversight, has risen to \$114.8 billion, according to the U.S. Department of Energy. The 2012 estimate was \$112 billion. This estimate, however, is based on annual budgets large enough to meet cleanup obligations, but those budgets are unlikely to be funded, and costs will typically rise when projects are delayed. The budget estimate is contained in a report titled “2013 Hanford Lifecycle Scope, Schedule, and Cost.” The Hanford site typically receives around \$2 billion annually for cleanup work, but the report relies on budgets of more than \$3 billion for several of the years between now and 2020.

- The federal government will be paying Maine Yankee Atomic Power Co. nearly \$82 million to reimburse the utility for costs incurred in storing its spent fuel between

1998 and 2002. The plant was decommissioned in 2005 after an eight-year process. There are currently 550 metric tons of spent nuclear fuel contained within 60 canisters at the site, and it costs roughly \$9 million annually to store the fuel. The federal government is legally responsible for removing and storing spent fuel from the nation's nuclear power plants, but the delays in and finally the shutdown of the Yucca Mountain project have left the government with no place to put the fuel. However, companies like Maine Yankee are allowed to recoup only those costs already incurred, not future costs, which is why lawsuits have to be filed every several years, a company spokesman said.

Tepco Struggles to Keep Damaged Fukushima Daiichi Plant Stable

There has been an increasing run of problems at the damaged Fukushima Daiichi plant, which was stricken more than two years ago by an earthquake and ensuing tsunami. Between power losses and leaking water storage pools, Tokyo Electric Power Co. (Tepco) is having difficulty keeping the plant stable.

Power outages earlier this year, one possibly caused by rodents chewing through connective wiring, caused loss of cooling at the plant's spent fuel pools for spent fuel. And leaking underground storage pools are contaminating the site.

The plant uses a great deal of water to cool the reactors and spent fuel assemblies in spent fuel pools, and has been releasing that water into underground storage pools. But leaks in the storage pools have caused some 167 metric tons of contaminated water to seep into the soil at the site. About 400 tons a day of contaminated water is produced from cooling operations. While radioactive cesium is removed from the water, other contaminants remain. Tepco currently has no long-term solution to decontaminate the water, and in early April stated that it had lost faith in the underground pools and would be moving the water out of them. The water will be stored in above-ground tanks instead.

Despite these setbacks, the utility said work was steadily progressing in its plans to remove the fuel from the Unit 4 spent fuel pool. That work is scheduled to begin this November, and will take about a year to complete. Work on the structure to cover the damaged Unit 4 reactor building is in progress, and when finished, the new struc-

ture will feature ventilation, filtration, and handling gear for removal of the fuel assemblies. This remains one of the highest priorities at the site.

At press time, experts from the International Atomic Energy Agency were planning an April visit to the plant to review the utility's decommissioning plan for the damaged plant. The review is expected to be the first of a two-mission program to provide IAEA support for Japan's decommissioning program.

In other developments, a research facility to be used as a base for developing the equipment and human resources needed for the decommissioning work will be built in Naraha Town in Fukushima Prefecture. The facility is expected to start operations in 2014. A mockup nuclear reactor will be set up at the research facility, which will include equipment for developing and verifying remote-controlled equipment. It will also be used to develop the robotics to be used in the decommissioning, as well as remote-controlled equipment for training operators.

And in some positive news, a study by a group of Japanese researchers has found that 99 percent of Fukushima Prefecture residents and those of neighboring Ibaraki have barely detectable levels of internal exposure to cesium-137. Of the remaining 1 percent, all showed levels well below the government-set limits. Those with the highest rates were people who had been regularly eating un-screened food such as wild mushrooms, wild boar, and freshwater fish. After following advice not to eat such foods, however, their internal exposure levels significantly dropped. The levels of internal exposure found in Fukushima residents are much lower than the levels found in people living near the Chernobyl plant following the 1986 accident there.

Germany Begins New Search for Repository Site; Other International Briefs

Germany is launching a new site selection process for a geological repository to hold the country's radioactive waste, under a compromise agreement between the federal and state governments and opposition parties. A 24-member federal-state commission will be created to develop proposals on safety requirements and site selection criteria by the end of 2015. A site would be selected by 2031, and the repository could be built and operating by 2040.



Panorama photo of Hungary's National Radioactive Waste Repository.

In the meantime, no more radioactive waste will be transported to the Gorleben salt dome in Lower Saxony, which had been under investigation as a potential repository site. Site suitability studies at the facility will be terminated, and a research laboratory will not be built there. However, Gorleben will not be excluded from the new site selection process. The €2.0 billion (\$2.6 billion) cost of selecting and operating a waste repository will be paid by the country's nuclear power plant operators

- All highly enriched uranium (HEU) has now been removed from the Czech Republic. A final shipment of 68 kilograms of used fuel from the research reactor at Rez, near Prague, arrived in Russia on April 1. The HEU shipments were the result of a multi-year effort involving the National Nuclear Security Administration, the International Atomic Energy Agency, the NRI Rez, and Russia's state nuclear corporation Rosatom. The fuel was shipped by truck, ship, and rail, via Poland to Russia. There, the fuel will be down-blended into low-enriched uranium for use in commercial power reactors.

- On January 30, the United Kingdom's Cumbria County Council's Cabinet voted to withdraw from the process to find a site to build an underground nuclear waste repository, even though two boroughs within the county, those of Copeland and Allerdale, had voted to proceed with the siting work. The decision effectively ends a four-year investigation into whether Cumbria should host the repository. Council members expressed concern about their legal rights to withdraw if they proceeded to the next step in the process. The U.K. began its search for a geological repository site in June 2008.

- On February 12, some 600 square meters (around 6500 square feet) of wall panels and roof sections caved into the Chernobyl-4 turbine building. There were no injuries, no changes in radiation levels at the site, and the incident had no effect on the construction work on the new Chernobyl shelter. The turbine building is located some 50 meters (165 feet) from the sarcophagus over the damaged reactor. At the time of the collapse, it was believed that the cause was excess snow on the roof, but a later report

blamed a truss failure due to "a combination of negative factors" rather than snow.

- The public debate on France's deep underground repository project, Cigeo, began in early February. The debate, a legally binding procedure, was expected to last some four months. The government hopes to begin construction of the repository in 2019, with operations beginning in 2025.

- Hungary has opened the first disposal chamber of its 250-meter-deep repository for low- and intermediate-level waste. The chamber will hold some 4600 drums of waste in 510 reinforced concrete containers. More chambers will be built, to eventually accommodate 40 000 cubic meters of waste. The state-owner Public Limited Company for Radioactive Waste Management carried out site investigations for more than 10 years before choosing and building a facility at Bataapati, in the south of the country. Surface facilities at the site were opened in 2008.

- The U.K. Nuclear Decommissioning Authority is transferring around 100 tonnes of nuclear fuel from the Dounreay site in Scotland to Sellafield, to enable Dounreay's security status to be significantly downgraded. The fuel in question is from nuclear research programs conducted over the past four decades in the United Kingdom, and because it contains plutonium and high-enriched uranium that are potentially recyclable, it is not classified as waste. The transport, to consist of some 30–40 journeys by rail or sea, is expected to take about six years. The first transport is expected to take place in 2014 or 2015.

- Barsebäck Kraft announced in early March that it has submitted an application to the Swedish town of Kävlinge to build an interim storage facility for low- and intermediate-level nuclear waste on the site of the shutdown Barsebäck nuclear power plant. A national storage facility for the nation's L/ILW from its 12 reactors, 10 of which are still in operating, is projected to be opened in the early 2020s. Barsebäck Kraft says it needs the storage for reactor vessel components from the plant's two boiling water reactors, which it wants to dismantle. Officials in the town of Kävlinge have concerns that the interim storage facility could become permanent.

● The estimated cost of cleaning up the waste from Canada's nuclear power program has risen to \$6 billion, up from \$3.6 billion projected just last year. The estimate represents the costs associated with decommissioning, managing, and disposing of the waste. The main reason for the liability adjustment is an increase in the indirect costs attributed to the decommissioning and waste management over a period of up to 70 years for the program, Atomic Energy of Canada stated on their website.

● The European Commission want European Union members to release more detailed information about their decommissioning programs, including a detailed cost estimate of all waste management steps up to disposal, including associated activities, such as research and development. A 2011 directive requires that member states notify the commission about decommissioning funding regimes. The commission did not specify which states if any were not in compliance with the directive.

● Cleanup work at Sellafield will remain the U.K. Nuclear Decommissioning Authority's number one priority for the next several years, according to the new NDA business

plan, which covers the years from 2013 to 2016. The focus at Sellafield will remain on a program of major works to decommission high-hazard legacy ponds and silos.

● At the end of March, Ukraine's nuclear regulator issued a new license for the construction and commissioning of the interim storage facility to store spent nuclear fuel at the Chernobyl nuclear power plant. The facility is already under construction. The new license supersedes the existing license, and will allow work to include construction and pre-commissioning activities. When completed, the facility will provide long-term dry storage for more than 20 000 fuel assemblies from the plant.

● In April, Sellafield announced that its workers had made history by completely decommissioning a radioactive building without stepping inside it. The Caesium Extraction Plant was built in 1951 to produce radioactive material for the medical industry; it operated until 1958. Because of high radiation levels, the building's contents, including vessels, pipes, furnaces, and shielded tanks, were all removed remotely during a 10-year project. The building is now empty and ready for demolition. ■